

theless, in some cases, as for example when it is desired to observe the spectrum of ferric solutions, it is preferable to employ the original tube; * for the flow of the liquid causes solid particles to be given off, which tend to become fixed in the electrode.

SCIENCE IN GERMANY

(From a German Correspondent.)

IN the twenty-fifth volume of the "Zeitschrift für Wissenschaftliche Zoologie," just completed, Ehlers has given some interesting conclusions with respect to the distribution of the Chætopoda which were collected during the *Porcupine* expedition, by Messrs. Carpenter, Wyville Thomson, and Gwyn Jeffreys ("Beiträge zur Kenntniss der vertical Verbreitung der Borstenwürmer im Meere"). He finds, in the first place, that of all Chætopoda occurring on the European coasts of the North Atlantic Ocean, only two families show representatives in the greater sea-depths at more than 300 fathoms, and he thinks, therefore, it is not certain that any forms belong exclusively to the deep sea. Further, the conditions of temperature of the water, as they determine the horizontal distribution of Chætopoda, seem also to be of influence with regard to their vertical distribution, seeing the deeper layers of water are also the colder. Accordingly the forms that live in the cold deep sea of that zone of the Atlantic Ocean correspond with those of the coast fauna of the Arctic regions; and Ehlers thinks that they might even have a direct connection through currents which descend from the Arctic regions to the depths of warmer marine zones. It is also conceivable that the deep-sea forms, at a time when those regions of the Atlantic were warmer than they are now, were frequenters of the coast, and in proportion as the Gulf Stream heated the upper layers, they retired into the depths. For the most part they remain inferior to their Arctic congeners, perhaps because the conditions of existence in the depths are less favourable, and partly, doubtless, on account of the lack of plant life, and also the small amount of animal nutriment for the worms, there provided. Though in the greater sea depths the light is quite excluded, yet in the Chætopoda found there (with some rare exceptions) we miss neither the colours nor the eyes, which are met with in coast regions. Ehlers believes that these colours and eyes are preserved in the lightless depths, in consequence of new animals ever migrating down from the brighter layers of water, and so preventing the disappearance of these body-parts. There is, however, in the same "Zeitschrift" which contains Ehlers' work, a paper by the physiologist Ranke, on the eyes of leeches (*Hirudo medicinalis*), which may explain that phenomenon in the deep-sea Chætopoda in a different way ("Beiträge zur Lehre von der Uebergangs-Sinnes-Organen"). Ranke, on the ground of his observations on living leeches, considers that their very simply constructed eyes have also sensations of touch and taste; and, further, that they are not eyes proper, which, on occasion, also serve other ends; they are, rather, neutral organs of sense, which can act in various directions, but in no particular one so specially as sense organs more highly organised, and therefore limited to one specific energy. This appears partly from the fact that organs quite similar to these so-called eyes on the head of the leech occur also in the whole of the rest of its body, quite in the same way as the so-called side organs of fishes and amphibia, which probably afford sensations of touch. We might, then, regard the eyes of the deep-sea Chætopoda as similar indifferent organs of sense, which, even where light fails, do not discontinue their functions. In an appendix to his memoir, Ehlers further describes how the tubeworms (Tubicola) construct their abodes. They use their feelers only for seizing and holding the building materials,

then press these to the mouth or side of the abdomen, where they are coated with a cement secreted from numerous skin-glands in these parts of the body. So prepared, the piece has merely to be pressed on a firm bed, or the edge of a tube already formed, and there it adheres. In this way not only are new tubes constructed, but also any damages are repaired.

NOTES

THE following are the probable arrangements for the Royal Institution Friday evening meetings before Easter 1876:—Jan. 21, Prof. Tyndall, F.R.S.: The Optical Department of the Atmosphere in relation to the Phenomena of Putrefaction. Jan. 28, Prof. Huxley, F.R.S.: The Border Territory between the Animal and the Vegetable Kingdoms. Feb. 4, W. H. Preece: The Applications of Electricity to the Protection of Life on Railways. Feb. 11, William Crookes, F.R.S.: The Mechanical Action of Light. Feb. 18, Dr. C. William Siemens, F.R.S.: The Action of Light on Selenium. Feb. 25, Lord Lindsay: The Transit of Venus. March 3, Earl Stanhope, F.R.S.: The Ancient Sun Worship, and the Remains of it in England. March 10, Prof. W. H. Flower, F.R.S.: The Extinct Animals of North America. March 17, Sir Henry Sumner Maine, K.C.S.I.: The Later History of the Fief and Manor. March 24, Prof. Odling, F.R.S. (subject not announced.) March 31, Edward B. Tylor, F.R.S.: Ordeals and Oaths. April 7, Prof. Jas. Dewar, F.R.S.E.: The Physiological Action of Light, Part II. The following lecture arrangements have been made:—Christmas Lectures (adapted to a juvenile auditory) by Prof. Tyndall, F.R.S.: Six lectures on Experimental Electricity. In this course the phenomena of frictional electricity will be so illustrated and its principles so explained as to enable the pupil to repeat the experiments, and to pursue the subject further, at school or at home. With this object in view the laws of the science will be elicited from facts obtained with the simplest apparatus. Prof. A. H. Garrod: Twelve lectures on the Classification of Vertebrated Animals. Dr. J. H. Gladstone, F.R.S.: Eight lectures on the Chemistry of the Non-metallic Elements. Dr. W. Spottiswoode, Treas. R.S.: Four lectures on Polarised Light. R. P. Pullan: Three lectures on his Excavations in Asia Minor. W. T. Thiselton Dyer: Four lectures on the Vegetable Kingdom; the Boundaries and Connections of its Larger Groups. Prof. G. Croom Robertson: Three lectures on the Human Senses. Edward Dannreuther: Two lectures on Wagner and his Trilogy (with pianoforte illustrations).

THE Stockholm *Nya Dagligt Allebanda* of the 4th inst. contains some account of the return voyage of the *Pröven* from the mouth of the Yenesei, after the departure of *Nordenskjöld*. The information is sent by Dr. Théel Kjellman, to whom, it will be remembered, *Nordenskjöld* gave over the command of the *Pröven*. The *Pröven* left Dickson Harbour, at the mouth of the Yenesei, on the 19th August, and set her course towards the north-east part of Novaya Zemlya. On the 23rd August she was found to be already in 75° 24' N. lat., and 66° 24' long. E. from Greenwich, and so a little to the south of Cape Middendorf, on the north-east coast of Novaya Zemlya. This peculiar circumstance can only be explained by a very strong north-westerly current going from the Ob and Yenesei out over the Kara Sea. At Cape Middendorf, where ice was met with which extended eastwards as far as the eye could reach, the expedition was becalmed for six days. During this time a considerable amount of dredging work was done, with abundant results. That animal life is here uncommonly rich at the seabottom may be inferred from the fact that when a swab was allowed to remain in contact with the bottom for a few minutes it was covered over with animals: sea-stars by hundreds, with

* See "Annales de Chimie et de Physique," Third Series, t. iii., 1874.

the most beautiful nuances of red, numerous, and colossal bush-like Alectos, Crustacea, and Mollusca stuck fast on its strands. On the 28th a start was again made, and a number of immense glaciers coming down to the sea were passed; the coast was rocky and very wild. The following day anchor was cast in Udde Bay. Marine vegetation was uncommonly abundant here, which is all the more interesting, as it has been stated that the Kara Sea is devoid of all plant life. Vegetation on land, on the contrary, was exceedingly scanty. Some small withered willows met the eye here and there. The fell-poppy (*Fjellvalmon*) alone yet bare flowers, but even these the autumn had almost destroyed. "The whole of nature produced the impression of indescribable desolation." On the 3rd September the *Pröven* sailed into the mouth of Matotschkin Strait, where the expedition remained till the 11th September. They then steered homewards, and after experiencing exceedingly tempestuous weather, the *Pröven* entered the harbour of Tromsø on the 3rd October. "We have," the letter concludes, "during this summer sailed over known and unknown seas more than 6,000 (English) miles; we have visited regions whither expeditions for more than three hundred years have attempted in vain to come; we have made rich collections in all departments of natural science. What more can man desire from such a journey?" In Petermann's *Mittheilungen* for December, along with some account of the expedition, is a map showing the route outwards and home of both parties. Nordenskjöld had reached St. Petersburg on the 17th instant.

In his will, dated Oct. 16, 1875, Sir Charles Wheatstone bequeaths all his scientific books and instruments, as well as his medals and diplomas, to the Corporation of King's College, London, together with a legacy of 500*l.* for the purchase of scientific instruments. To the Royal Society he bequeaths the portraits of the Hon. Robert Boyle, and of all the other scientific men in his possession, together with a legacy of 500*l.* to be added to the Wollaston Donation Fund.

It is stated that Prof. Huxley has accepted the invitation of the Senatus of the University of Edinburgh to take charge again of the Natural History Class during next summer session.

THE *Challenger* arrived at Valparaiso on the 19th inst.

THE following gentlemen have been appointed as a Commission to consider the claim of the Scottish Meteorological Society on Government, a claim which we may state has already been reported on by the Duke of Devonshire's Commission:—Sir Wm. Stirling Maxwell, Dr. Hooker, Col. Strachey, Messrs. Francis Galton, Brassey, D. Milne Home, Farrer, and Lingen.

PETERMANN'S *Mittheilungen* for December contains a translation of Mr. Stanley's letters, with a clear map embodying the results of his circumnavigation of Lake Victoria Nyanza, and showing at the same time Speke's route of 1858, and that of Speke and Grant in 1861–62. In an introduction to the letters, Dr. E. Behm discusses the results obtained by Mr. Stanley. The *Daily Telegraph* of Tuesday publishes two letters from the late unfortunate M. Linant de Bellefonds, describing his sojourn at Mtesa's and his meeting with Mr. Stanley.

THE same number of the *Mittheilungen* contains the first part of an elaborate and important paper by Oscar Loew, giving an account of Lieut. Wheeler's second expedition into New Mexico and Colorado in 1874, and pointing out the important scientific bearings of the results obtained. He pays a well-deserved tribute of praise to the enterprise of the U.S. Government, in accomplishing the survey of so large a portion of their extensive territories in so comparatively short a time.

AN interesting letter appears in yesterday's *Daily News* from Mr. Smithurst, the engineer of the steamer which made the

voyage up the newly discovered Baxter River in New Guinea, referred to in Sir Henry Rawlinson's address at the Geographical Society last week. The river seems to be a magnificent one, and could evidently be made navigable to a considerable distance inland. The exploring party found the banks to consist mainly of mangrove swamps, though, near the end of the journey, high clay banks with *Eucalyptus globulus* were found. Scarcely any natives were seen, though there were frequent signs of their being about. Mr. Smithurst refers to a very remarkable bird, which, so far as we know, has not hitherto been described. The natives state that it can fly away with a dugong, a kangaroo, or a large turtle. Mr. Smithurst states he saw and shot at a specimen of this wonderful animal, and that "the noise caused by the flapping of its wings resembled the sound of a locomotive pulling a long train very slowly." He states that "it appeared to be about sixteen or eighteen feet across the wings as it flew, the body dark brown, the breast white, neck long, and beak long and straight." In the stiff clay of the river bank Mr. Smithurst states that he saw the footprints of some large animal, which he "took to be a buffalo or wild ox," but he saw no other traces of the animal. These statements are very wonderful, and before giving credence to them we had better await the publication of the official account of the voyage. A very fair collection of rocks, stones, birds, insects, plants, moss, and orchids has been made, which will be submitted to a naturalist for his opinion. The dates of Mr. Smithurst's communication are from August 30 to Sept. 7.

THE long-standing Chancery suit of the King of Portugal *v.* Carruthers has at length been terminated by a compromise. The suit arose out of the will of the late eminent African explorer, Dr. Welwitsch, who had explored a portion of Central Africa at the expense of the Portuguese Government, and had made large and important botanical collections. These collections were left by will to the British Museum; but Dr. Welwitsch's right to so leave them was disputed by the Portuguese Government. The compromise finally arrived at is to this effect:—A declaration that the King of Portugal is entitled to all the collections; the King, as an act of grace and favour, paying the defendants 700*l.* in full discharge of all demands; that the study set (the best) and the next best set of the collections should be separated from the other collections; that the British Museum should have the second best set as a gift from the King, and that the King should have all the other sets, and should distribute them as he may think proper.

WE learn from the *Gardener's Chronicle* that M. E. André, well known as a landscape gardener in this country as well as on the Continent, and also as the editor of the *Illustration Horticole*, is about to undertake a botanical exploration in Brazil, Peru, Ecuador, and New Granada.

M. GABRIEL DE MORTILLET, the learned sub-director of the St. Germain Museum, has been appointed President of the Paris Anthropological Society for 1875–76.

TWO new zoological gardens have recently been established and opened in the United States of America, at Philadelphia and Cincinnati, and both appear to be making good progress. The Superintendent of the former is Dr. Dörner, who was lately scientific secretary of the Zoological Garden at Hamburg, and has quitted Europe in order to inaugurate the new institution in America.

THE meeting of Orientalists to be held in September next at St. Petersburg is to be accompanied by an exhibition of Oriental manuscripts, coins, arms, implements, and other objects illustrative of the history and industry of the East. The meeting will be directed by an Imperial Commission, presided over by Prof. Gregorieff, the well-known geographer of Central Asia.

and including the names of Peter von Lerch, Victor von Rosen, and Daniel Chvlosou. MM. Gregorieff and Lerch are ready to receive objects intended for exhibition.

At a meeting of the Fellows of the Royal Society of Edinburgh, held on Monday, the 22nd inst., the following were elected office-bearers for the session 1875-76:—President, Sir William Thomson, LL.D. Vice-Presidents: Rev. W. Lindsay Alexander, D.D., the Right Rev. Bishop Cotterill, David Milne Home, LL.D., Prof. Kelland, Lord Neaves, David Stevenson, C.E. Secretary, Prof. H. Balfour. Secretaries to ordinary meetings: Professors Tait and Turner. Treasurer, David Smith. Librarian, Prof. MacLagan. Members of Council: Alexander Buchan, J. Matthews Duncan, M.D., Prof. George Forbes, Andrew Fleming, M.D., Prof. Geikie, Sir Alexander Grant, Thomas Harvey, LL.D., John G. McKendrick, M.D., Arthur Mitchell, M.D., Charles Morehead, M.D., Ramsay H. Traquair, M.D., Robert Wyld, LL.D.

THE session of the Poitiers Meteorological Congress was opened on the 18th inst. M. Leverrier was present. The future Association is to be composed of sixteen departments: Loire, Loire et Cher, Loiret, Indre et Loire, Maine et Loire, Loire Inférieure, Vendée, Charente Inférieure, Deux Sèvres, Charente, Haute-Vienne, Vienne, Indre, Sarthe, Corrèze, and Creuze. The Gironde, which is to become the centre of another branch of the Association, sent three delegates. The proceedings are to be published, but the sittings were not public.

It is officially announced that it is the purpose of the U.S. Government to make a complete and representative collection of the mineral products of the United States, which shall illustrate the mineral resources of the country and its mining and metallurgical progress at the forthcoming International Exhibition to be held in Philadelphia.

IN consequence of the time at the Manchester meeting of the Iron and Steel Institute being insufficient to allow of the reading and discussion of several papers that were upon the programme, a supplementary general meeting is being held in London to-day in the rooms of the Council of the Institution of Civil Engineers. Besides discussions, on papers read at Manchester, Mr. G. J. Snedus will read a paper on fireclay and other refractory materials; Mr. William Hackney on the manufacture of anthracite coke in South Wales; Mr. C. J. Homer on the North Staffordshire Coalfield, with the ironstones contained therein. Suggestions will be submitted to this meeting for introducing such modifications in the rules and regulations as will in future admit of dealing fully with the various subjects that may be brought before each meeting of the Institute.

AT its last sitting the French Geographical Society broached a scheme for inducing the several French Railway Companies to place at each station a map of the vicinity, with indications of the most notable historical or economical facts connected with the district. It appears that this is the universal practice on Brazilian railway lines.

A THIRD and cheaper edition of the translation of Dr. F. A. Pouchet's work, "The Universe," published by Messrs. Blackie and Sons, has been issued. We reviewed the work in our first volume (p. 259), when we expressed our belief that it would do much to foster a love of pure science in the young. This cheaper edition, though a few illustrations and notes have been omitted, is still a handsome and beautiful work, well adapted for a present to boy or girl.

IT is expected that the buildings for the Yarmouth Aquarium will be completed by the 1st of June, 1876. Mr. Saville Kent has been appointed naturalist and manager of the aquarium.

AMONG recent additions to the Manchester Aquarium are nine examples of the Sterlet (*Accipenser ruthenus*) from St. Petersburg,

a species that has hitherto, in this country, been on public exhibition in the living state at Brighton only. The fine Sturgeon obtained from Colwyn Bay for the Manchester tanks some six months since is still doing well.

It is said that the French National Library is to be opened every evening from 8 to 10. It is an important innovation which has been tried with success at the library of the Conservatoire des Arts et Métiers, and has existed for years at the Bibliothèque St. Génévieve, in the Quartier Latin, for the use of students.

EXPERIMENTS have been tried with success for using locomotive engines on Paris tramways.

THE International Medical Congress, which this year met at Brussels, will hold its next meeting at Geneva, in September 1877.

THE Italian Expedition for exploring the interior of Africa will leave in January next, and will be absent three years.

THE members of the Metropolitan Scientific Association lately paid a visit to the recent excavations in the Surrey Commercial Docks. One of the most important results of the visit was the discovery of what, on further examination, will doubtless prove to be a line of fault hitherto unsuspected, and if further inquiry confirm the accuracy of the engineer's section, another line of fault will have to be added to future geological maps of this district.

A MOVEMENT has been set on foot at Philadelphia, the Society of Arts Journal states, since Mr. Cunliffe Owen's visit to that city, for the establishment of a Museum of Science and Art of a character similar to our own South Kensington Museum.

MR. SERJEANT COX will publish, early in January, the first volume of a treatise on "The Mechanism of Man," being a reproduction, re-written, re-arranged, and greatly extended, of his work entitled "What am I?" which has been for some months out of print.

A PAPER was read at the meeting of the Psychological Society on Thursday week, by Mr. G. Harris, LL.D., F.S.A., vice-president, on "Caligraphy as a test of Character," in which, after remarking on the various modes in which character in each person is exhibited, and on the infinite diversities of handwriting, he adverted to the peculiarities which display character, and illustrated his theory by exhibiting a number of original autographs, including those of Napoleon I., Wellington, Nelson, Brougham, Horne Tooke, Southey, Cowper, Sheridan, Cobbett, Bulwer Lytton, and Charles Dickens, commenting on the contrast between the writing of the two latter. A discussion followed, in which Mr. Serjeant Cox, the President, Prof. Leone Levi, and others took part.

THE additions to the Zoological Society's Gardens during the past week include an Arabian Baboon (*Cynocephalus hamadryas*) from Arabia, presented by Mrs. M. A. Moore; a Pampas Deer (*Cervus campestris*) from Uruguay, presented by Capt. Hairby; a Herring Gull (*Larus argentatus*) European, presented by Mr. P. Gipps; a Western Slender-billed Cockatoo (*Lyrius pascinator*) from W. Australia, presented by Mr. W. J. Irving; a Golden Tench (*Tinca vulgaris*), European, presented by Mr. S. C. Hincks; a Capybara (*Hydrochærus capybara*) from S. America, two Central American Agoutis (*Dasyprocta punctata*), two Yellow-winged Blue Creepers (*Certhia cyanea*), two All-green Tanagers (*Chlorophonia viridis*), two Naked-throated Bell Birds (*Chasmorhynchus nudicollis*), two Yellow Hangnests (*Cassicus persicus*), a Sulphury Tyrant (*Pitangus sulphuratus*), a Silver Blue Tanager (*Tanagra cana*), a Blue Grosbeak (*Guiraca cyanea*), five Pileated Finches (*Coryphospingus pileatus*), from Brazil; five Darwin's Pucras Pheasants (*Pucras darwini*), from China, deposited.